65p

THE Unexplained

MYSTERIES OF MIND SPACE & TIME

Life: a fine balance
UFOs: who's watching who?
Ancestral arguments
The Vandy mystery
End of Ardachie

141

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THE Unexplained
MYSTERIES OF MIND SPACE & TIME

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In next week's issue
Witchcraft is often known as the 'Old Religion', especially to members of the fashionable covens that grew up during the **Occult revival** of the 1960s and 1970s – but how old is it really? Are its beliefs and rituals simply the inventions of a retired civil servant, Gerald Gardner? Visions of angels that put fresh heart into the British soldiers in the mud of Mons were widely reported as fact, but in **Angels of Mons** we look at the truth behind the legend. In **Isa Northage** we investigate this materialisation medium's extraordinary abilities to conjure up the dead; and we explore the search for the fabulous medieval king, **Prester John**, who was believed to live in unimaginable glory in a land beyond the boundaries of Islam. And in **Origins of Man** we look at fascinating hints that Neanderthal man could still be alive today.
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Life in the balance

Modern scientists have found that the Universe displays certain curious features that could suggest it was designed to nurture intelligent life. CHRIS COOPER examines the evidence for this startling claim

NATURAL THEOLOGY – the endeavour to prove the existence of God by argument from the observed features of nature, rather than from appeal to faith – is rather out of favour nowadays. The successes of science have encouraged the conviction that all facts about the world are to be explained as the outcome of forces operating blindly and automatically since the beginning of time, not as parts of a plan executed by a divine architect. But certain developments in modern cosmology make it look as if, when the mechanism of the Universe was set running, it was delicately adjusted with the interests of its future inhabitants in mind. The physical world looks suspiciously as if it had been intended as a home for us, or at least for intelligent life of some kind. This idea, too loose to be called a scientific theory, now goes under the general name of the 'anthropic principle' (from the Greek *anthropos*, human being). It may lead to a revival in natural theology.

The creation, from the frontispiece of the Luther Bible of 1534: 'In the beginning God created the heaven and the earth.' The modern scientific explanation of the origin of the Universe dispenses with the notion of a Creator. And yet certain features of the Universe seem to suggest that it was designed *by* an intelligent being *for* intelligent beings to live in

Life in the balance

Clearly, human life depends on many delicately balanced features of the environment. If the Earth were a little closer to the Sun, it would be too hot for life – there would be no liquid water here. If it were a little farther away, it would be too cold – any water that existed would be in the form of ice. In either case, it is almost impossible that any but the simplest organisms could appear on the Earth. Again, without a protective layer of ozone in the upper atmosphere, the surface of the Earth would be subjected to bombardment by cosmic radiation, and it is inconceivable that life could ever have spread from the protection of the oceans onto the land.

But fortunate though such facts are for us, they do not constitute evidence for any kind of design, for it can be argued that such circumstances are almost bound to occur somewhere among the 100,000 million stars that make up our Galaxy – let alone the billions of other galaxies that we can observe. Doubtless in this immensity there are many planets suitable for life – but, so the argument goes, they are the ones that chance has favoured, far outnumbered by the ones that were not so fortunate.

But some of the remarkable facts that favour the existence of intelligent life are of a different kind. In the light of our present knowledge, it now looks like tremendous luck that galaxies, stars and planets were born at all – that the Universe did not remain the chaos of diffuse gas that it once was. And given that at its birth conditions *were* just right to permit the appearance of galaxies and the subsequent formation of stars, it seems like a further stroke of luck that the Universe was sufficiently long-lived to give intelligent life time to evolve. And still further coincidences – if that is what they are – are responsible for the existence of elements such as carbon, upon which life depends.

Such 'lucky' facts as these apply to the whole Universe, not just to some remote corner of it such as the Earth. And they raise the question of why the Universe should be the way it is rather than some other way less favourable to us. There is no way of evading the question using a statistical argument as in the case of the Earth's fitness as a planet for intelligent life. To appreciate our good fortune fully, however, we need to know a little about the history of the Universe.

Cosmologists now agree that the Universe

was created in a single 'big bang' between 15 and 20 billion years ago. (One billion here means one thousand million.) Of what came before – if there was a 'before' – or what the first instants were like, we know nothing: but one hundredth of a second after the beginning, the temperature was about 180 billion °F (100 billion °C). The density of matter was over 3 billion times that of water, while electromagnetic radiation was compressed into a 'soup' nearly a billion times as dense as water.

All the matter we can see today with our most powerful telescopes – that is, out to a distance of about 10 billion light years – was squeezed down into a volume less than one light year across. This tightly packed matter was expanding; as it blasted outwards, the temperature and density fell. After 700,000 years, the Universe consisted of a thin gas, about 75 per cent hydrogen and 25 per cent helium, and still expanding.

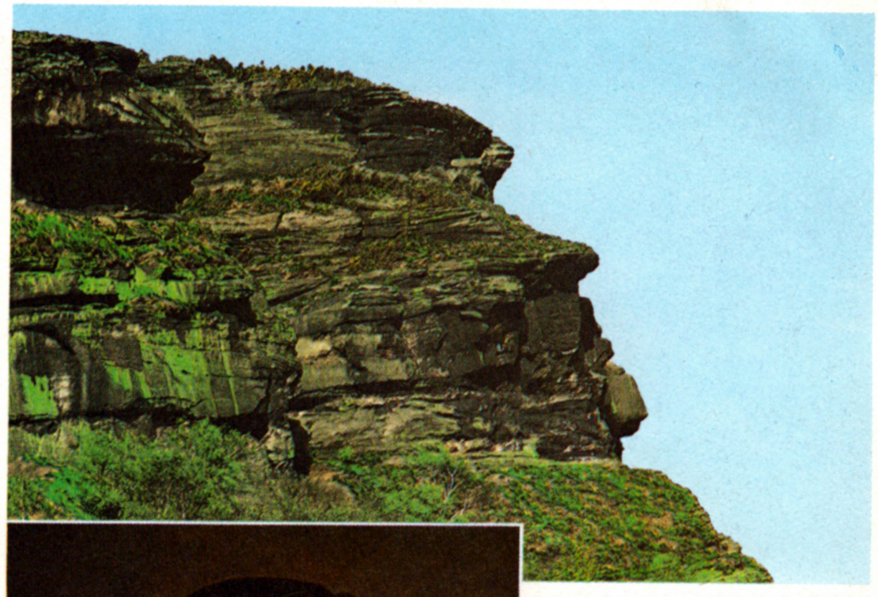
Lumps in the Universe

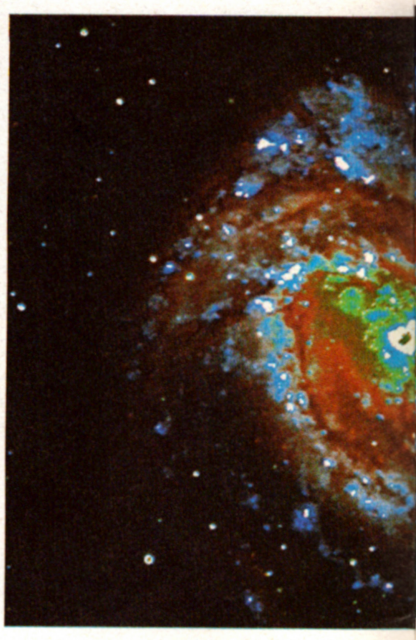
At some point the gas broke up into galaxy-sized lumps, each of which started to fall together under its own gravity. Luckily for us the early Universe, uniform though it was, was not too 'smooth' – if it had been, the gas would never have broken up into galaxies. Fortunately, there was just enough 'lumpiness' – patches of matter of greater density – to trigger the formation of galaxies. Smaller lumps within each of these proto-galaxies shrank under gravity, releasing heat and becoming stars. These victories of gravity over the general expansion were purely local, however; while numbers of galaxies grouped themselves into stable clusters, the clusters continued to recede from each other, as they still do today.

The balance between the strength of gravity, the overall density of matter, and the rate of expansion of the early Universe was also fortunate for us. Had the expansion rate been a little too low (or to put it another way, had the density of matter and radiation been a little too high), the Universe would have stopped expanding and collapsed back on itself in a matter of some hundreds of millions of years – not long enough, as far as we can estimate, for intelligent life to evolve. And if the expansion rate had been too high (or the density too low), gravity could not have caused concentrations of matter to form into galaxies and stars. Such variations in the balance of forces, with their huge implications for the possibility of intelligent life in the Universe, depend on an infinitesimal adjustment of the density of matter during the first fractions of a second of the existence of the Universe. In other words, matter emerged from the big bang with just the right combination of density and speed of expansion to ensure that there would be the opportunity for intelligent beings to evolve.

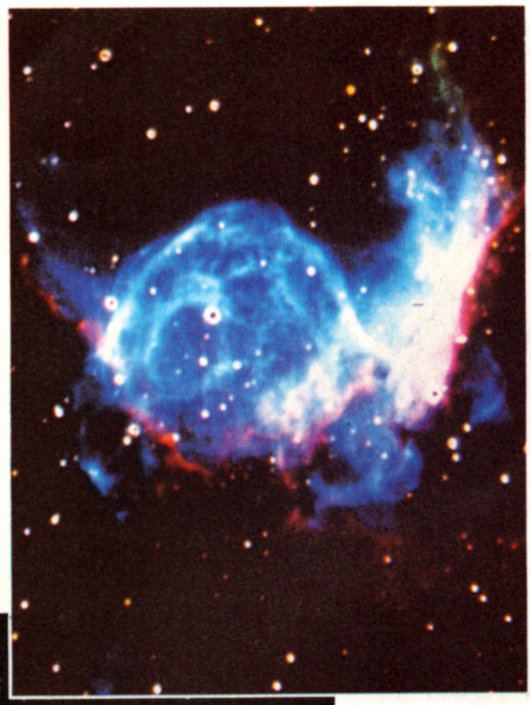
And here is one more of these hair-fine 'adjustments' of the primordial Universe on which our existence depends. There seems to have been the minimum possible amount of turbulence, or swirling, in the expanding matter. If there *had* been any appreciable turbulence, it would have been evened out in the course of expansion; but as it did so, heat would have been generated – or alternatively, the cooling of the Universe would have been retarded. In either event, the result would be much the same today: the Universe would be a far hotter place. Intense 'background radiation' would fill intergalactic space. If the theories of the cosmologists are right, even a tiny amount of initial turbulence would lead to a colossally high temperature – far above, say, the boiling point of water – making life quite impossible anywhere.

When the first stars were born, conditions of the earlier Universe were duplicated within each one – but now heavier nuclei were built up. The most massive stars ran through their life cycles rapidly – in mere millions of years – and built up the whole



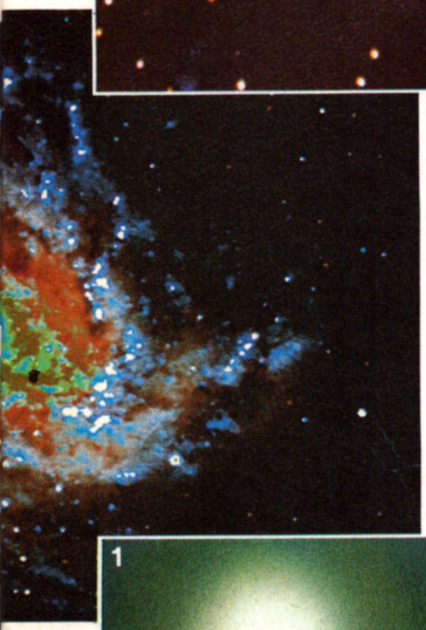


Top: the strange rock formation at Helsby Hill, Cheshire, England – so like a face that it is difficult to believe that it was formed by the natural forces of wind and weather. One of the popular 'proofs' of the existence of God in the 18th century was advanced with some force by Archbishop William Paley (above). Essentially it stated that the existence of the world as it is implies that it was designed by an intelligent force. But however miraculous the existence of the world may be, scientists argue, it is quite possible that, like Helsby Hill, it is here merely as a result of chance



Left: the nebula NGC 2359 – a cloud of gas surrounding a group of young stars. The gas contains elements essential to life, such as carbon, derived from supernovas of other stars

Below left: the galaxy M83. That galaxies exist at all is the result of an extraordinarily fine adjustment in the events immediately after the big bang. The expanding matter developed 'lumps' that condensed into galaxies (below, 1). If the rate of expansion had been too great, this condensation would not have taken place (2), while if it had been too small, the Universe would have stopped expanding and collapsed back on itself (3)



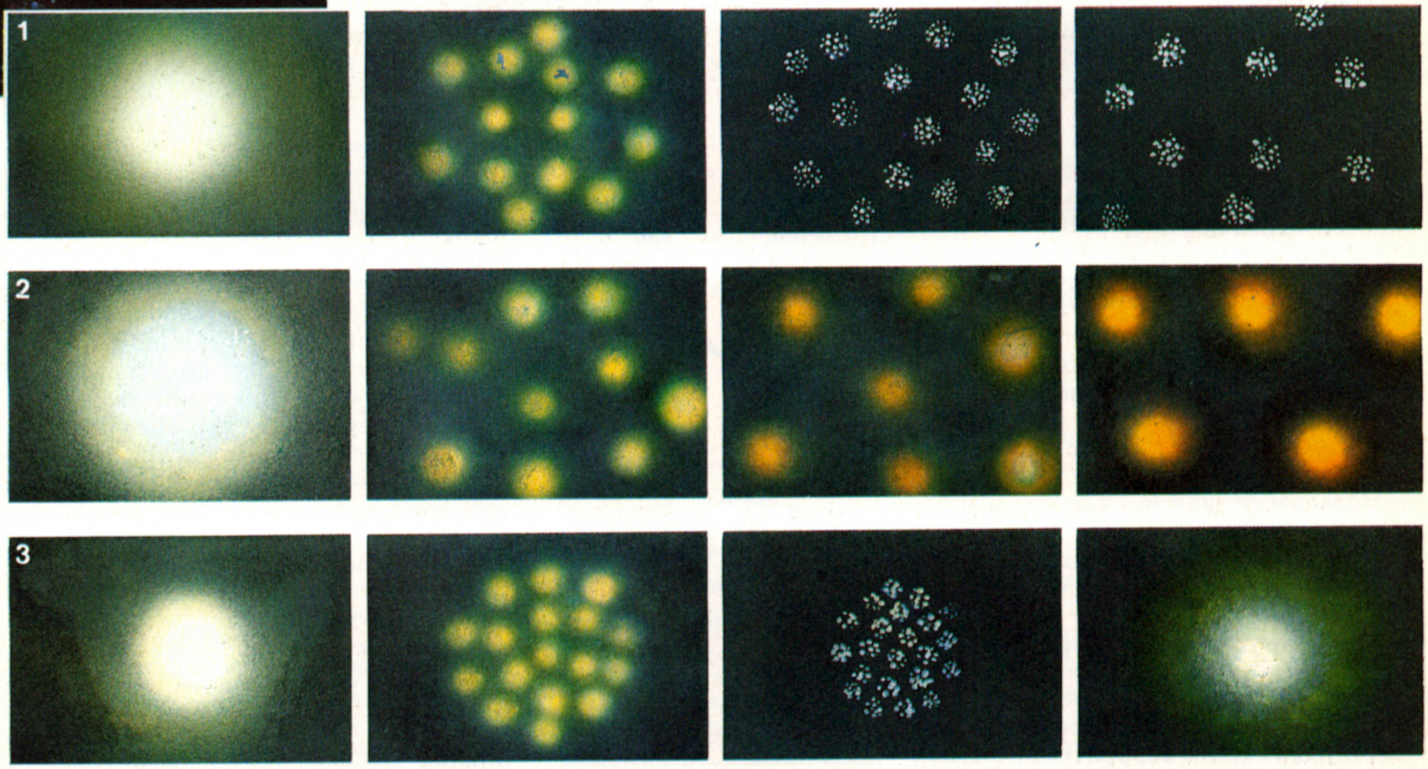
range of stable nuclei. They ended their lives in supernova explosions that scattered the newly created elements – notably the ones necessary for life, such as carbon, oxygen and nitrogen – through the galaxies to which they belonged. And these elements were incorporated into planetary systems as they were formed from the swirling discs of gas surrounding the stars.

One stroke of good fortune was pointed out by the astrophysicist Sir Fred Hoyle in a characteristically perceptive observation. Carbon is formed in the centres of stars in a two-step process: first, two helium nuclei collide to form a nucleus of beryllium; after a while, if this survives, another helium nucleus collides with this and forms the carbon nucleus. The success of that second step depends on the energy of the helium nuclei being just right: if they move too fast or too slowly they are not likely to fuse with the beryllium nucleus and, since the latter is short-lived, the chance of carbon forming would be lost. As it happens – or as some intelligent agency intended? – the temperatures in the centres of large stars are close to the optimum for the second step of the carbon-building process.

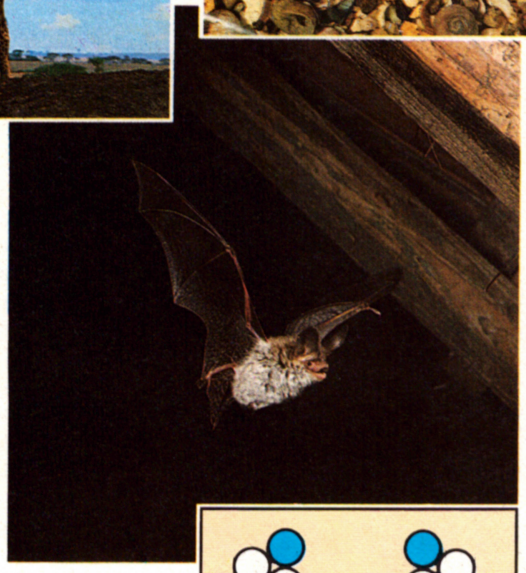
There is another piece of what appears to be luck here: once formed, the carbon nucleus does not readily combine with helium nuclei to form heavier elements, so the stock of carbon nuclei is not depleted.

Neither of these happy coincidences would occur if the strength of the 'strong' force, which binds protons and neutrons together in nuclei, were only a few per cent different from what it is. Furthermore, if the strong nuclear force were only slightly stronger than it is, the matter that emerged from the first few minutes of the big bang would not have consisted predominantly of hydrogen, with a small fraction of helium: all the protons and neutrons would have been built up into helium. With virtually no hydrogen in the Universe, there could be no water, which consists of hydrogen and oxygen; but, as far as we know, water is essential to life. And stars that were 100 per cent helium when they began their lives would complete their life cycles so quickly that there might not be time for life to evolve on their planets.

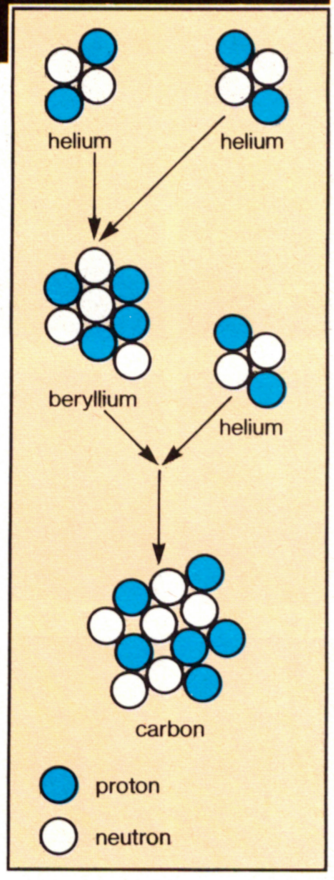
Certain reactions among elementary particles take place through the action of the



Human life depends on a delicate balance of features of the environment. But the process of evolutionary adaptation ensures that life itself can survive in a wide range of environmental conditions. The giraffe can feed on vegetation that no other creatures can reach (far left); the bat can navigate without light (below left); and flat-fish such as plaice (left) are adapted to survive in the intense pressure of the ocean bed



Below right: how carbon is formed in the nuclei of stars. The entire phenomenon of life on Earth is based on carbon – but it is an extraordinary coincidence that carbon exists at all. It is formed when two helium nuclei collide to form a beryllium nucleus, which then collides with another helium nucleus. The success of this operation depends on the temperature at the centre of the star being just right



'weak' nuclear force. It is in connection with neutrino reactions that the weak force vitally affects the possibilities for life. Neutrinos are the chargeless, probably massless, particles that pervade the Universe. At the end of its life, a large star begins to run out of nuclear fuel to support its own huge weight. It progressively shrinks, and then suddenly implodes catastrophically. The matter at the centre vanishes into a black hole (see page 30), and a flood of neutrinos is released. These 'ghosts' of the nuclear world are produced in such enormous numbers, and the matter inside the star is so dense – denser than the matter of the Universe after its first hundredth of a second – that the neutrinos significantly interact with the matter. The outer layers of the star, rich in the heavy elements, are torn off in a giant supernova.

If the weak force were slightly weaker than it is, the star would not be disrupted and the elements essential to life would not be scattered through interstellar space. If the weak force were slightly stronger, the neutrinos would not succeed in escaping from the star's core in sufficient numbers to disrupt the outer layers, and again the heavier elements would remain trapped inside the star.

In either case, the result would be a Universe in which the development of intelligent life was simply not possible.

These are just some of the remarkable coincidences that have been noticed in cosmology. They cry out for explanation, and it may be that with a deeper understanding of physics we would be able to show that the Universe had to be just this way and no other. Whether this would dispel the sense of awe surrounding the delicate balance of the world would remain to be seen; it might, on the contrary, increase our sense of its mystery.

But research might take a different direction: for it might be that the coincidences are exactly that – that they are as arbitrary as they now seem, and that the whole of the Universe known to us is indeed the result of a happy chance. And that would imply that there are other universes in which the dice did not fall so fortunately and in which life could never have emerged.

Death and rebirth

One suggestion is that the Universe dies and is reborn repeatedly, for ever. The density of the Universe is unknown: if it is sufficiently great, the force of gravity will be sufficiently strong to bring the receding galaxies to a stop and then pull them back in towards each other until they vanish in a 'big crunch' that would be like a reverse performance of the big bang. This would presumably be followed by another explosion and the birth of another universe. But this time the fundamental forces of nature might not be as finely balanced – so that, for example, no stars might be formed from the interstellar gas, or else they might appear but carbon might fail to be formed in the nuclear furnaces. But this universe, too, would collapse, and a new one would be born. So the cycle would continue, universe following universe to eternity, and the overwhelming majority of them never witnessing the birth of intelligent life. But in an infinitesimal number of

them, conditions would be so finely balanced that observers could appear and wonder at their good fortune.

But there is an even more astonishing conjecture that has been put forward to explain the fact that the Universe has apparently been designed with the emergence of intelligent life in mind. According to this, the 'unsuccessful' universes in which conditions are not right for life are to be found, not in the past or future, but co-existing in parallel with the Universe we know.

The idea is based on the 'many-worlds' interpretation of quantum mechanics, first proposed by the American physicist Hugh Everett III. In quantum mechanics it is often impossible to ascribe a definite value of some physical quantity to a system: for example, it is often impossible to talk of the precise position of a particle – only of a range of possible positions. After a measurement of the particle's position is made, it seems to 'jump' from this indefinite state into a state in which it *does* have a definite position. The interpretation of this peculiar feature of quantum mechanics has been contested for decades: some insist that the particle has a definite position all the time and that the 'jump' is illusory; others that the particle cannot meaningfully be said to have any position at all until the measurement is made (see page 2694).

Everett proposed that there is an infinite number of universes, in each of which the particle has one of its possible positions. When we measure its position, we simply find out which of these universes we are in. In other universes, parallel selves make the same measurement and find a different answer. At every instant each universe splits into an infinity of further universes, in each of which different physical possibilities are realised.

How does this staggering proposal relate to the anthropic principle? At the moment of the big bang, the laws and structures of the Universe were fixed and the broad outline of its future history established. In Everett's picture an infinite number of parallel universes came into existence, each with its own set of laws, arrangement of matter and radiation, specific strengths of the various physical forces, and so on. Each universe immediately split into an infinity of others. So, alongside the world we know, there are innumerable others: some chaotic, some consisting of dark, cold gas devoid of stars, some that are collapsing into their own 'big crunch' – and an infinite number (though only a tiny proportion of the whole) that are much like our own and are inhabited by sentient observers. So, just as the Earth is one 'successful' planet among many 'failures', our Universe is just one 'success' among many 'failures'. . . .

As wild a flight of fantasy as this may seem to be, the many-worlds theory has been developed by some cosmologists in all earnestness as an alternative to the assumption that the world was designed by an intelligent being for other intelligent beings to live in. For although it may be *true* that the Universe was set in motion by a divine contriver, scientists agree that it would be abandoning the very idea of scientific explanation to admit, at the very foundation of our concept of the Universe, an assumption that is not itself understandable in terms of science.

Below left: an engraving by Gustave Doré showing the betrayal of Christ by Judas. The German philosopher Gottfried Wilhelm von Leibniz (1646–1716) suggested that there are an infinite number of possible worlds – one of which differs from ours in the single detail that Judas does not betray Christ (below right). This idea has been developed by modern quantum physicists to explain the anthropic principle: we exist in one of an infinite number of universes – and there are many others in which life cannot evolve

Further reading

Paul Davies, *The accidental Universe*, Cambridge University Press 1982
Stephen Weinberg, *The first three minutes of the Universe*, Fontana 1978

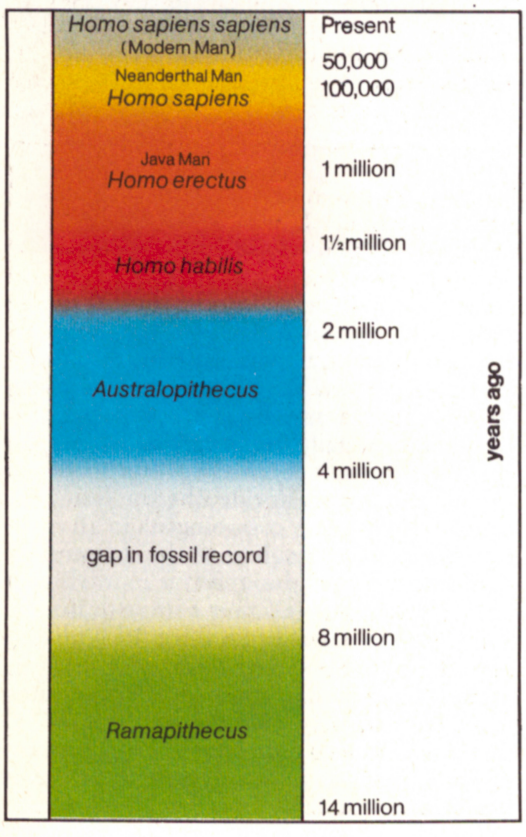
The Darwinian theory of the evolution of mankind gives a clear picture of species succeeding species until modern Man finally emerged some 50,000 years ago. But modern dating techniques suggest that this account needs revision, as PETER JAMES explains

Remains to be seen

THE DARWINIAN THEORY of evolution, once regarded as a keystone of orthodox science, is tottering on its feet. At the same time, old-fashioned Christian creationism is enjoying a phenomenal revival in the United States and Britain. The catalogue of evidence against traditional Darwinism is now so formidable that even the most fundamentally religious schools of thought, committed to the literal truth of the book of Genesis, are attracting the sympathy of well-qualified scientists. The Creation Research Society of the United States boasts well over 600 voting members who hold degrees in science to at least a master's level.

The creationists, of course, have maintained a continual war against Darwin's theories since they were first published in 1859. But their arguments, once based very much on appeals to the authority of the Bible, have gathered a new momentum from the growing secular criticism of the Darwinian theory of evolution. The eminent scientific partners, Sir Fred Hoyle and Professor Chandra Wickramasinghe, leading authorities on interstellar space, have produced a series of books and papers in which they have expressed a growing doubt about the mechanisms of Darwin's theory. In 1982 Wickramasinghe was even called as a star witness to defend the teaching of creation science in Arkansas, at a belated sequel to the Scopes Trial at which the defenders of the theory of evolution seemed to have triumphed (see page 2764). In 1971 a Harvard-trained lawyer, Norman Macbeth, assessed the claim that Darwin's theory was still pre-eminent in the field. He found that it failed – and did so largely on the testimony of the evolutionists themselves. In fact, he suggested that 'Darwinists' have already long buried Darwin's theory as a viable explanation of evolution – but that they have tended to keep this quiet from the general public, possibly through fear of a creationist backlash.

In analysing the twists and turns of the philosophical debate, we should be careful to distinguish clearly two different ideas. Darwin's theory is not synonymous with the theory of evolution, although it is very easy to gain the impression that Darwin invented



it. What is currently known as Darwinism actually owes much to the work on genetics carried out at the end of the 19th century by an Austrian monk named Gregor Johann Mendel (see box). In fact, the basic concept of evolution, that one species has developed from another, has been commonplace in western European thinking since the time of the Greeks. What was novel – and persuasive – about Darwin's *Origin of species* was that it appeared to provide a 'scientific' mechanism for such changes, based on the observation of nature.

Although he shied away from the controversial topic of Man, Darwin claimed that all species had evolved solely through a process of 'natural selection'. Classical Darwinists, although they speak freely about creatures 'adapting' to given environments, do *not* mean that the animals concerned learned various skills or developed physical characteristics – certain muscles, sharper claws, harder feet or the like – that they somehow passed on to their descendants. They mean that slight changes, *entirely the result of random mutations*, have sometimes helped the individuals of a species to be more successful than their fellows and eventually to outnumber them. Such slight changes, increasing the 'fitness' of the animal, eventually accumulate to become a new characteristic or organ.

The theory denies any possibility of 'outside interference', sudden change or even the simple idea that characteristics acquired by parents can be passed on to offspring. All that happened, according to Darwin, were infinitesimally small changes, governed by natural selection, over vast periods of time. If this is so, we should be able to test it by looking for the evidence of smooth gradual change in the fossil remains found in geological strata.

'Fossil man', whose remains have been more assiduously studied than those of any other creature, might seem to provide the perfect test-case for Darwin's theory. Surely the archaeological and geological evidence can determine which theory, biblical or Darwinian, is nearer the truth? It seems reasonable enough to suppose so.

The fossil record can certainly supply enough evidence to disprove the beliefs of those who take the creationist claim literally: that Man was made on the seventh day of creation, some 6000 years ago. The fossil evidence, despite the special pleading of the creationists, *does* show a record of increasing complexity, from the blob-like organisms of

Left: a cartoon of 1872 satirising Charles Darwin's theory of evolution by showing Man's descent via pig and bull. The Darwinist account of the emergence of modern Man describes a steady progression of species, beginning with the primitive and ape-like *Ramapithecus*, thought to have lived some 14 million years ago. Several million years later there allegedly followed *Australopithecus* – whose fossil remains (below, an *Australopithecus* skull) indicate an upright but still distinctly ape-like creature (left) – and *Homo habilis* which later developed into *Homo erectus* and, eventually, into *Homo sapiens*, the immediate precursor of modern Man. Re-dating of some of the fossil remains on which this account was based, however, suggests a very different picture of Man's evolution, in which, far from supplanting each other, many of the species (below left) may have co-existed for millions of years

Cross purposes

At the time when Darwin formulated his theory of natural selection, nothing was understood about the process of heredity. Observation had shown that certain characteristics could be passed on from generation to generation – indeed, farmers had for centuries been acting on this knowledge in breeding livestock. The general belief – shared, among others, by Darwin himself – was that these characteristics were transmitted from parents to offspring through the blood; this notion is behind the common expressions 'new blood', 'blue blood', and so on. The problem with the 'blood' theory was that it did not explain how natural selection works.

The mystery of the process of heredity was solved, almost single-handed, by an Austrian monk named Gregor Johann Mendel. In 1856 he began a series of meticulous experiments in breeding sweet peas in the garden of the monastery in Brünn, Austria (now Brno, Czechoslovakia), of which he was abbot. He discovered that characteristics are not passed on through a mixing of the 'bloods' of the parents, but through factors that were later given the name 'genes'.

Mendel's work provided the missing link that was needed to complete the explanation of how Darwin's process of natural selection worked. But ironically, although Mendel carried out his experiments during Darwin's lifetime, Darwin himself did not become aware of them. Mendel's work was rediscovered in 1900 by three botanists who had independently reproduced his results – 16 years after his death.

the Cambrian age to today's complex mammals – and Man.

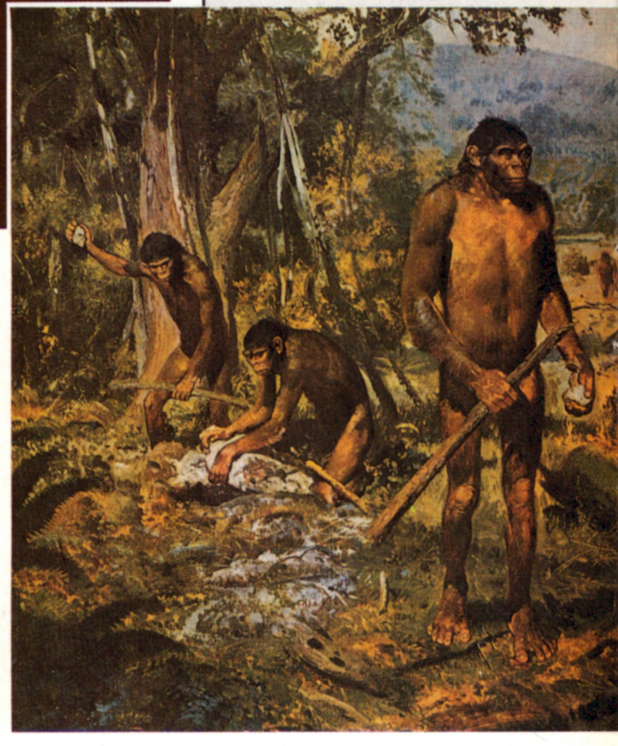
If the fossil record does not support creationist beliefs, does it support the theory of evolution – and if so, what *kind* of process of evolution does it imply? The conventional Darwinian view of Man's evolution, despite the numerous differences of opinion that exist between individual scientists, can be summed up in a straightforward, rough model that most would endorse. It is thought likely that our oldest traceable ape-like ancestor is a little character from some 14 million years ago known as *Ramapithecus*, whose jawbones (though no other remains) have been found at numerous sites throughout Asia. He probably did not walk upright or use tools, and had a relatively small brain. What are thought to be his descendants, *Australopithecus* and *Homo habilis*, were apparently – according to the fossil record – living in Africa several million years later. They were still very ape-like, but walked upright and, it seems, used primitive stone tools. Brain size and abilities slowly grew over the millennia, eventually giving rise to *Homo erectus*, a recognisable if primitive form of Man who used fire and a wide range of tools. It is not certain where, but natural selection from the population of *Homo erectus* is thought to have yielded *Homo sapiens* about half a million years ago. Neanderthal man was an early form of *Homo sapiens*, probably ancestral to modern Man, *Homo sapiens sapiens*, who appeared about 50,000 years ago.

So, at any rate, runs the orthodox Darwinian version – a tale of slow and gradual progression over some 15 million years. But is this reconstruction really reflected in the fossil record? Most evolutionists will insist that it is, but there remains an uncomfortable feeling that they do so only by overlooking a mass of data that contradicts the idea of a smooth succession from one hominid species to the next. In fact, this evidence, if taken seriously, would endanger the shaky 'family trees' drawn up for 'our ancestors'. Despite the efforts of Darwinists to explain it away, substantial evidence exists of human fossil types found thousands, even tens of thousands, of years 'out of time'.

Even at the more recent end of the 'evolutionary scale', where one would expect to find the clearest evidence of the Darwinian model, the fossils indicate confusion rather than clean evolutionary progression. An anomaly that came to light in 1972 in the leading British scientific journal *Nature* was found at the ancient burial ground excavated at Kow Swamp in southern Australia. The radiocarbon scale of dating (the most reliable radiometric method) suggests that *Homo sapiens sapiens* had arrived in Australia by 40,000, possibly 50,000, years before the present. Yet the Kow Swamp burials, which date from long afterwards, produced a group of 30 skeletons with strikingly pre-*sapiens* features. The skulls have sloping foreheads and massive brow-ridges and seem to represent a kind of *Homo erectus*, supposedly a form two steps down the evolutionary ladder from *Homo sapiens sapiens*. The standard view has *Homo erectus* being supplanted by more modern forms some 250,000 years ago – yet radiocarbon tests have dated the Kow Swamp finds as only 9000 years old. Had evolution worked backwards? Or was there a large 'remnant population' of *Homo erectus* surviving among their 'descendants' in Australia 40,000 years later? Or was *Homo erectus* not an ancestor, but a contemporary of early modern Man?

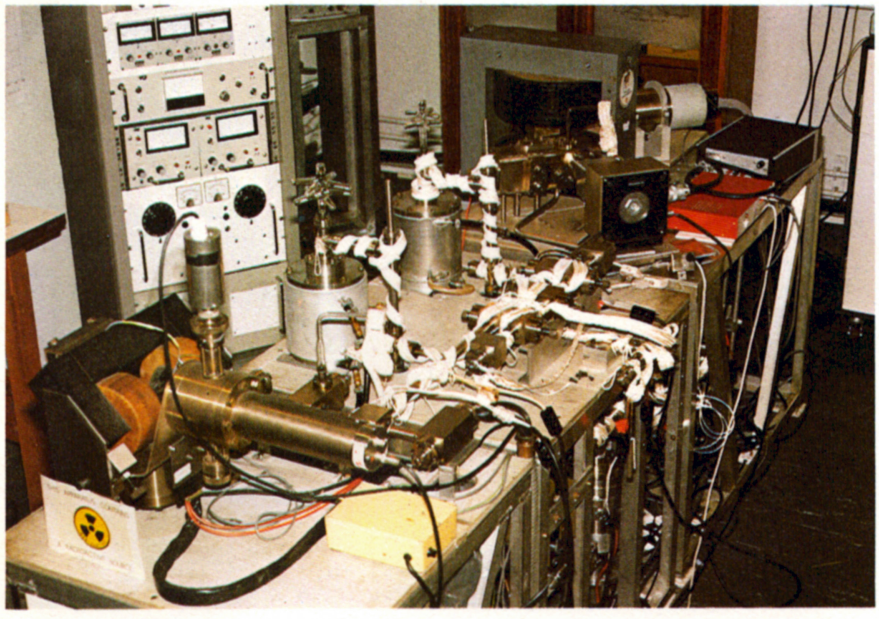
The Australian finds are not an isolated instance. A frontal skull bone from Aitape in New Guinea, dated to a mere 1000 BC, has been pronounced more typical of *Homo erectus* than of *Homo sapiens*. There is also a considerable problem in dating the classic *Homo erectus* remains from Trinil in Java.

Above: the Dutch scientist Eugene Dubois, who in 1891 discovered a hominid leg-bone, skull-cap (above right) and other bone fragments at a site in Java. These were initially hailed as evidence of a creature that was half ape and half man; they are now, however, regarded as an early form of Man, *Homo erectus* (right). Dating techniques originally put the age of Java Man at about 700,000 years – but it seems likely that the true age is nearer 16,000 years



Right: a radiocarbon dating machine in the University of Sheffield, England. The uncertainties of available dating methods have led to an account of the emergence of Man that may be badly distorted. Even the radiocarbon method can yield results that are wide of the mark – a radiocarbon test applied to the shell of a living oyster has given a date of 600 BC

Bottom right: an artist's impression of Neanderthal men hardening the points of spears. Did the Neanderthals die out around 35,000 years ago – or do they still survive?



The famous Java Man was once heralded as a 'missing link', half ape and half man, but is now considered a primitive human being with no 'ape' characteristics (see page 2764). Scattered in the area containing the controversial Java Man bones were numerous tektites, small glassy meteorites of a kind commonly found in south-eastern Asia and Australasia. Using the potassium-argon dating method their formation was placed around 700,000 years ago. This was thought to determine the age of Java Man to around 700,000 years.

The case of Java Man's dating reveals a curious lack of interdisciplinary communication between the experts in different fields. The anthropologists borrowed their dates from the geologists, who relied on laboratory tests from physicists to date the tektites found in the Trinil beds. Yet no one seems to have thought of consulting the man who is probably the world's foremost authority on tektites, Virgil Barnes. According to him, the potassium-argon method is *not* a good way of dating tektites. Using the far more reliable radiocarbon method, Barnes dates the fall of Australian tektites, whose age is also estimated by the potassium-argon method as around 700,000 years, at no longer ago than 16,000 years. George Baker, another tektite expert, feels that 5000 years is nearer the mark. If the same reduction applies to the Javanese tektites, Java Man would be whisked away from his long cherished role as our distant ancestor and reduced to a rather brutish contemporary of fully modern Man.

Ancestral claims

In 1965 Hungarian scientists discovered a large skull fragment at Vertesszöllös; its age has been estimated at about 400,000 years. Although it falls within the supposed time range of *Homo erectus*, its shape is considerably more modern, while its cranial capacity is around 85 cubic inches (1400 cubic centimetres), close to the present average and well above the estimated 50 cubic inches (850 cubic centimetres) of Java Man's brain. Again, we have evidence that *Homo erectus* was contemporary with, and not ancestral to, modern Man. A similar position has, in fact, been recently adopted by the British Museum of Natural History, after consideration of the very specialised characteristics of *Homo erectus* not shared by us. Its publication *Man's place in evolution* (1980) notes that: 'Because of these special characteristics, we think that the *Homo erectus* people were not our direct ancestors.' It would probably be more accurate to think of *Homo erectus* as a poor relation of the human family rather than its progenitor. Yet most encyclopaedias and textbooks on the subject continue to repeat the orthodox view that Java Man and the like are proof of the Darwinian view of evolution – that they are links in a long chain between ourselves and more remote, ape-like ancestors. The truth seems to be that *Homo erectus*, with his small brain-size, was simply forced into the role of ancestor.

A similar tale can be told of Neanderthal man, the next ostensible 'ancestor' in the human 'family tree'. It is generally assumed that the Neanderthals 'turned into' *Homo sapiens sapiens*, or were 'bred out' or exterminated around 35,000 years ago when fully-fledged modern Man arrived on the scene. Now, however, there is solid evidence that Neanderthal man continued to co-exist, although on the decline, with *Homo sapiens sapiens* for a further 10,000 years or so. This suggests an even more intriguing possibility, suggested by research into the 'wild men' legends of central Asia. Did Neanderthal man ever really die out?

On page 2834: the existence of Neanderthal man – and its implications for science

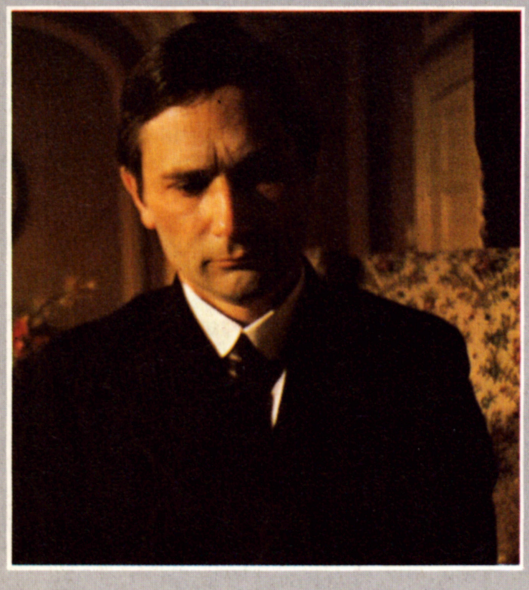
Did he fall or...?

When Edgar Vandy was found dead in a pond, the coroner's verdict was 'death by misadventure'. But Edgar's brothers, with a medium's help, set out to disprove the verdict. COLIN GODMAN and LINDSAY ST CLAIRE report

'HE DID NOT COMMIT SUICIDE and he says he was not foolish. It was not his fault. There was somebody else. There was another person.' The young woman's voice rang clearly across the room, she gripped the arms of her chair and, turning to Nelson Charters who was taking notes, she continued 'And you, you were quite near when it happened.' George Vandy, the third person in the room, bit his lip in a desperate attempt to hold back from asking the medium the many questions that crowded into his mind. It was vital the woman did not guess his true identity.

When the seance was over, Nelson Charters transcribed his notes and handed them to George Vandy. He, in turn, added his own impressions and bound the pages, carefully labelling them with details of time and place. This was not the first nor the last sitting Vandy would attend in an attempt to solve the mysterious tragedy that had struck his family.

On Sunday 6 August 1933, Nelson Charters had called at the Vandys' home to pick up George's brother Edgar. Nelson and Edgar had been friends since Edgar, a gifted engineer and inventor, had met Charters when he needed materials for his work: Charters ran a company that manufactured bicycles. The trip the two men were to take together on that glorious summer's day was to prove Edgar Vandy's last.



They drove out to the country estate at Nutley, East Sussex, where Charters's sister worked as private secretary for Sir Stephenson Kent; Charters's mother accompanied them on the journey. When they arrived, in the absence of the Kent family, the estate steward played host to the hot and dusty travellers. Charters's sister brought out tall glasses of ice-cold lemonade and the party sat in the shade, relaxing in the peace and tranquillity of their surroundings. Once refreshed, Charters and Vandy set off across the grounds in the direction of Maskett's Manor. There was a bathing pool in the wood there, fed by an underground stream. Screened from public eye by the trees, the secluded spot was a favourite place for the guests at Chapelwood Manor. On that particular Sunday, however, the two men were apparently alone.

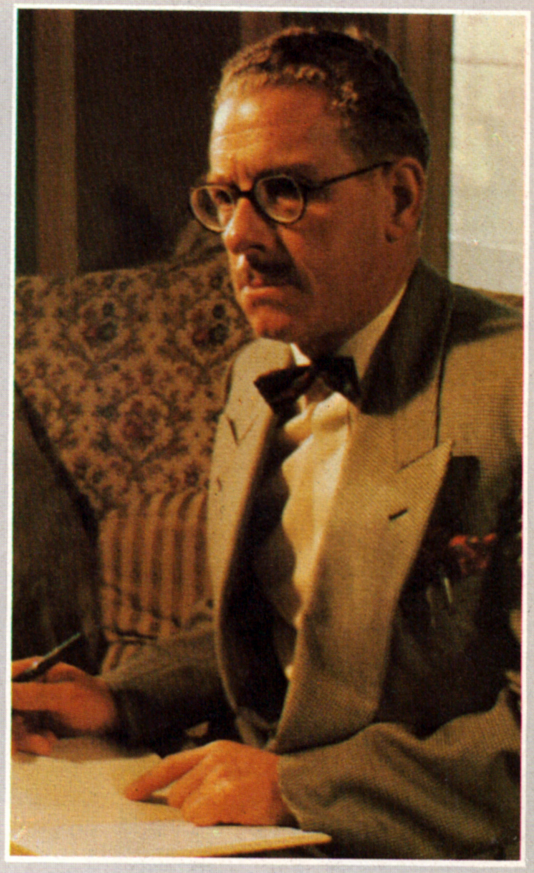
Nowadays the pool is overgrown, trees dip their branches into the stagnant green water and the bathing house is derelict. It is difficult to imagine that in 1933 the pool was well cared for, ringed by stone paving with a shelving concrete bottom.

The two men undressed in the bushes. Edgar had no swimming costume but Miss Charters had lent him one of hers. Exactly what happened in the next hour was to haunt Edgar's family for years.

Nelson Charters maintained that Vandy

Left: Edgar Vandy, engineer and inventor, whose death was to devastate his family

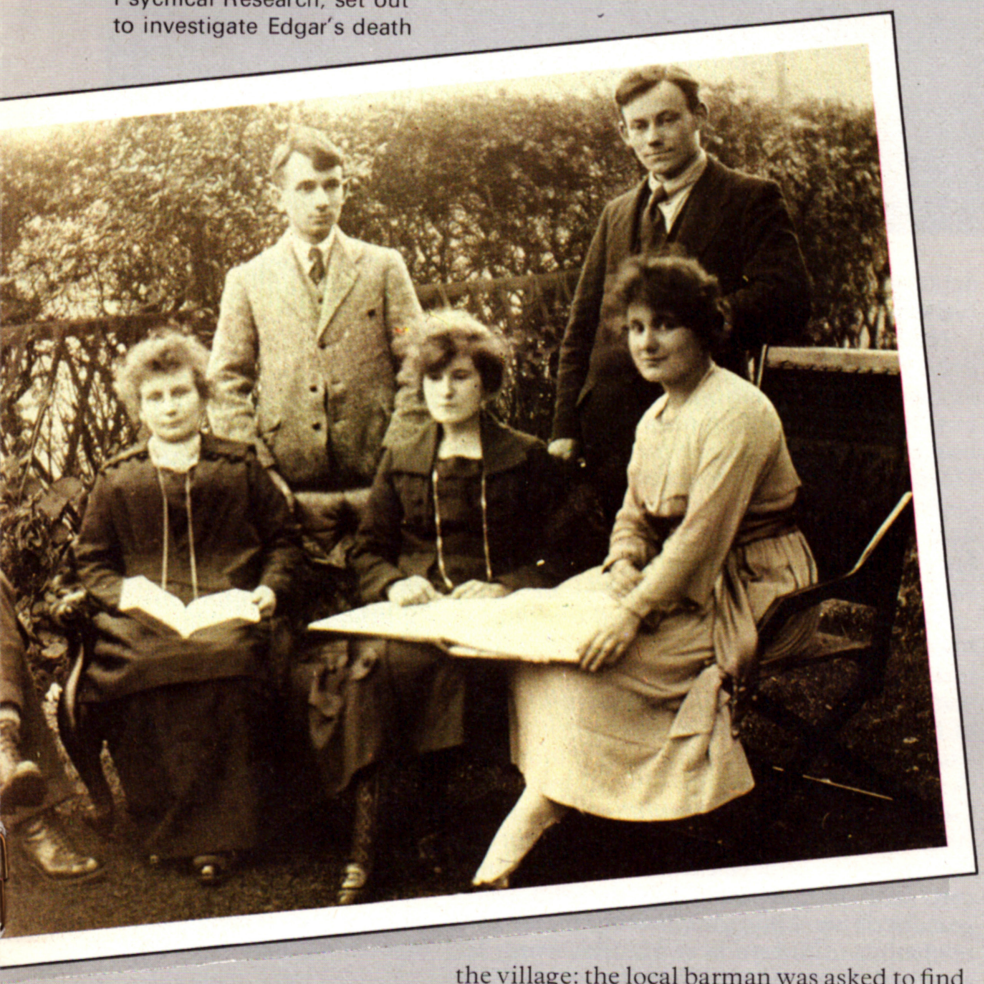
Right: Tony Poole as Nelson Charters, shorthand writer and friend to Edgar Vandy, in the BBC's dramatised documentary of the affair



Bottom left: George Vandy (played by actor Alaric Cotter), brother to Edgar and amateur sleuth who, with the help of the Society for Psychical Research, set out to investigate Edgar's death

entered the water first but he could not see the pool from his position in the bushes 200 feet (60 metres) away. When he did get to the pool edge he saw Vandy lying face downwards with arms outstretched, his hands splashing weakly. Charters plunged into the water but already his friend was sinking. He grabbed hold of Edgar but soon lost his grip and Vandy sank beneath the surface. The water was 6 feet (2 metres) deep but Charters could not find Vandy despite repeated efforts.

In a panic he left the pool and ran the three quarters of a mile (1 kilometre) to Chapelwood to get help. Unfortunately, all the younger men were away at a cricket match in the village. Charters did manage to alert a maid who told the Chapelwood Manor butler and he, in turn, alerted the police and local doctor. Meanwhile word had spread through the village: the local barman was asked to find swimmers. He motorcycled to the cricket match to collect Fred Kirby, Chapelwood's under-gardener. Kirby rode pillion back to Maskett's Wood. When he arrived he witnessed a scene of confusion at the pool.



Above: the Vandy family in happier days. From left to right: Harold, George and Edgar with their mother and two sisters

Charters, having returned to the scene, was being helped from the water by his sister (wearing only a dressing gown) and the butler. Silt had been stirred up, the pool was murky but Kirby started to dive immediately. He noticed the sudden and steep ramp from shallow to deep water, and it was at that point that he found the body of Edgar Vandy.

By this time local constable William Mills and Dr Alec Cooke were on the scene. After 15 minutes' examination the doctor pronounced Vandy dead, but the policeman and others carried on artificial respiration for an hour afterwards. An ambulance arrived and took the body to Chapelwood where the constable questioned some of the witnesses.

A family destroyed

At home in Manor Park, George Vandy was alone reading a book in the garden. London was basking in a heatwave. The tranquillity of the afternoon was to be shattered by the sound of the telephone: it was Charters ringing with the tragic news. Vandy collapsed – he was part of a very close family and his brother's death was to be a blow from which none of them would completely recover. The next morning, 7 August – a Bank Holiday – George and a cousin went to Chapelwood to identify the body.

The following day an inquest was hurriedly held at Maskett's Manor Farm where coroner Edward Hoare heard testimony from Charters and the butler, policeman and doctor. Neither Miss Charters nor Fred Kirby were called to give evidence, an omission that was to trouble George later.

Under oath Nelson Charters described showing Edgar the deep and shallow ends of the pool. He had assumed Edgar could swim and was unable to explain how Edgar could have lost consciousness so quickly. Evidence

was offered that the water was cloudy and the bottom slimy, so Vandy might have entered the shallow end where it was 3 feet (1 metre) deep and then, as he waded forward, lost his footing as the bottom shelved to a depth of 6 feet (2 metres).

The doctor described abrasions on Vandy's chin, shoulder and ribs caused, he asserted, shortly before death – rather than while he was being dragged from the pool. The post mortem had also revealed small cuts on the nose, cheek and jaw, and abrasions and bruises on the left shoulder, elbow and knee. Edgar's heart had been sound and Dr Cooke declared that, in his opinion, the deceased struck his jaw, rendering him unconscious. He then drowned. The coroner had no hesitation in recording the cause of death as 'drowning in a swimming pool whilst bathing and so dying by misadventure.' Edgar was 38 when he died.

To George Vandy and his grief-stricken brother this verdict was not enough. Only a few days before the accident Edgar had joined Harold at the Regent Street swimming baths in London. It was his first swim for four years and he could only manage a few strokes. It seemed inconceivable that Edgar would enter a strange pool alone. But how, then, had he met his death? Had he slipped back and knocked himself out on the pool edge or had he been pushed? Had there been someone lurking in that secluded spot, someone whom Charters, from his position in the bushes, could not see? Had the two men been fooling about in the water and things got out of hand? Or had a third person – if a third person there had been – been in the water with Edgar?

Finding the right medium

Despite the coroner having ruled out foul play, the brothers' suspicions turned on Nelson Charters. They cross-examined him but he revealed no more than he had said already. It was perhaps his failure to throw more light on the tragedy that caused George to turn for help to the Society for Psychical Research (SPR). He wrote to the Rev. Drayton Thomas who put him in touch with the young and celebrated medium Frances Campbell.

As Vandy had used his real name in correspondence with the SPR he decided to use a false name at any sittings with mediums. It was important that the medium should not be aware that he was linked with the Edgar Vandy case.

On 24 August, using the name 'Mr Felton', George arranged to meet Miss Campbell at her flat in Hyde Park Mansions. He did not attend the sitting alone but he took Nelson Charters with him, since he had been trained in shorthand. This may have only been a pretext; perhaps George hoped that the strain of the sitting would cause Nelson to say something incriminating. However, when Miss Campbell revealed details about Edgar's last few moments alive, Nelson said nothing.

'His passing over involved someone else. I don't say directly but indirectly, by neglect or incompetence. He was alone at the time but there were a lot of people on the scene immediately afterwards. Something hit him. He had some blow to the head. His head was jerked back so violently he thought at first his neck was broken. There were some bruises. He had no one with him at the time. He shows me water.'

George felt Miss Campbell was reading his mind but suddenly she said: 'He is not terribly keen on this enquiry. He does not want you to enquire too deeply into the cause of his death.'

A lady vanishes

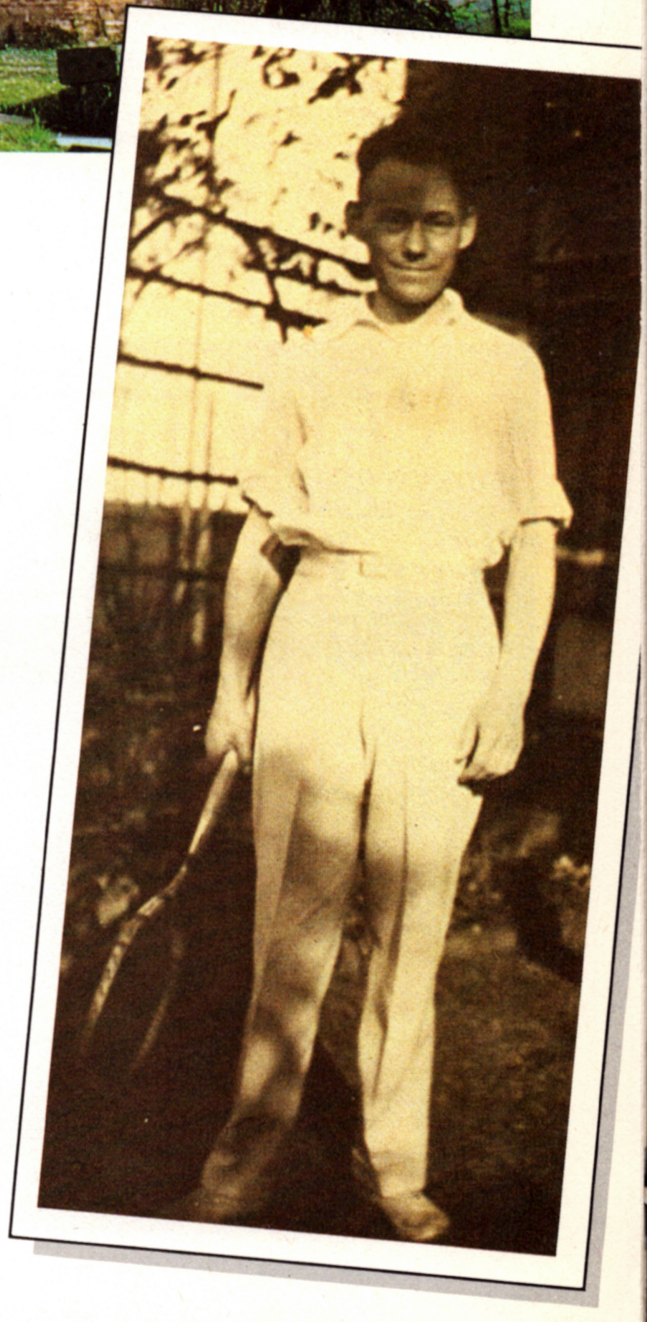
George Vandy was not to act on this message. Although neither he nor Harold could bring themselves to believe they could communicate with their dead brother – and were convinced they were witnessing a form of telepathy – six days later Harold, using an assumed name, attended a session with Miss Campbell. This time she said: 'There is someone on this side he gives me a feeling he is trying to protect. He is saying: "She was frightened and went away." What it means I cannot tell.' She added: 'No one knew she was there.'

Who was the 'she' referred to in Miss Campbell's trance? Unfortunately, no further information on that point was forthcoming. As with George, Miss Campbell painted a vivid picture of a man folding his clothes, diving into water, and falling and

Top: a scene from the BBC's version of the Vandy case, reconstructing Edgar in difficulties in the pool near Maskett's Manor

Above: Fred Kirby in 1975. In 1933 he was the Chapelwood Manor undergardener, the man who found the body of Edgar Vandy

Top: Maskett's Manor Farm in 1975. It was here, on 8 August 1933, that the inquest into the death of Edgar Vandy was held



Right: Edgar poses with tennis racquet in the last photograph his sister was to take of him. An image of Edgar holding a racquet was to occur to the medium Frances Campbell

hurting his head. She had a vision that matched Charters's description of the body as he first saw it. Then she went on to say 'Someone beside him was very frightened. He was stupid with fear. He did not know what to do. He has no anger, only sympathy and sorrow.'

Later the brothers realised there could be three possible explanations for the strange sittings: fraud on the part of the medium, the paranormal transfer of information to the medium from the living – or perhaps from the dead. Although the two Vandys had begun their investigation with little belief in the afterlife, Miss Campbell had mentioned things that they themselves had been unaware of but subsequent enquiries had shown to be true. At one point she had spoken of Edgar holding up a tennis racquet – this was odd since he did not play tennis. Later George's sister showed him the last photograph she had taken of their brother. Edgar was holding a tennis racquet.

But if the messages were coming from the dead what exactly did they add up to? Where did the reference to a woman fit in and what of the message that denied the misadventure verdict?

George and Harold resolved to continue with the experiment to see if they could learn more about the work that Edgar had been engaged in when he took his fateful drive to Sussex. He had been on the brink of launching a remarkable invention that would have almost certainly brought him fame, and fortune for the Vandy family.

On page 2858: more revelations – but where did it all lead?

Watching us watching them

When Harley Rutledge set out on a routine UFO investigation he did not reckon on it taking seven years to complete. Nor was he to know that his final report would be a landmark in UFO research. HILARY EVANS looks at this and at other influential projects

'PRACTICAL UFOLOGY' is, for many, a contradiction in terms. Faced with the elusive and often paradoxical nature of the evidence, they have concluded that there is no possible material explanation for the phenomenon and instead tend to regard the UFO as a psychological or psychic manifestation.

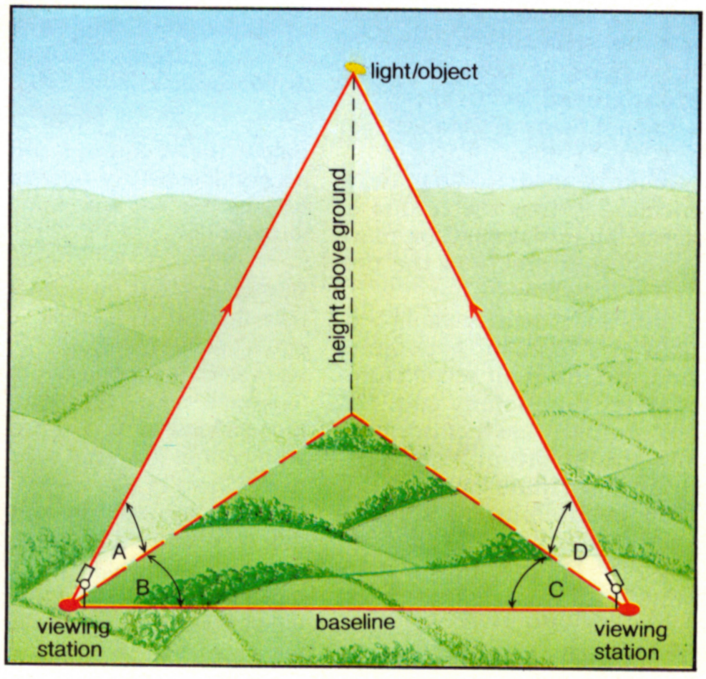
But French-born ufologist Jacques Vallée is just one of the more advanced thinkers among ufologists who thinks the subject is much more complex. In a paper delivered to the American Institute of Aeronautics and Astronautics in 1975, he declared: 'The UFO phenomenon is the product of a technology that integrates physical and psychic phenomena.' If this is so then, since orthodox science is better equipped to cope with physical than with psychic material, it might well be best to concentrate primarily on investigating the material aspect.

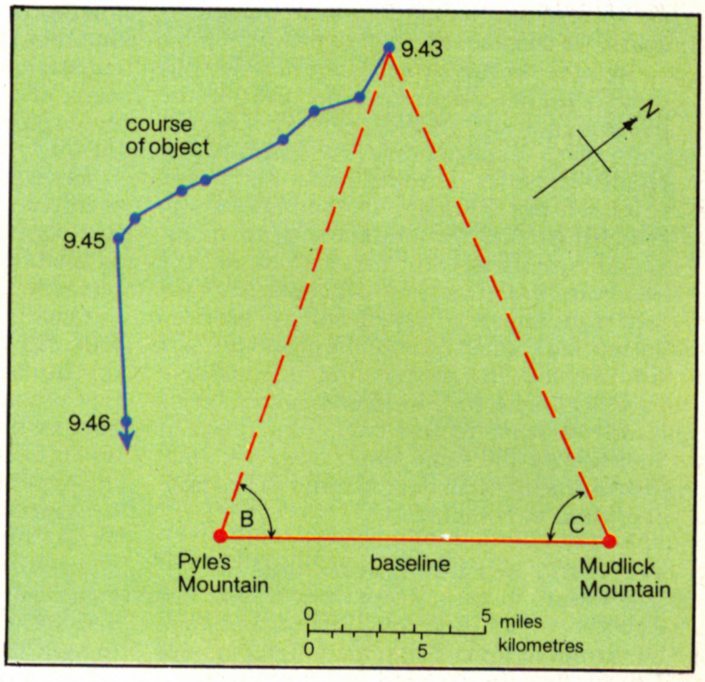
It was in just such a matter-of-fact frame of mind that Harley Rutledge embarked on what probably ranks as the most important piece of practical ufology yet carried out. It began in 1973 when, as professor of physics at Southeast Missouri State University at Cape Girardeau, he was confronted with an intriguing challenge. Near the town of Piedmont, some 50 miles (80 kilometres) from Cape Girardeau, curious lights had been seen on many occasions by many witnesses, in circumstances that seemed to defy any conventional explanation. As a scientist, he accepted the challenge to explain the phenomena – and he collected a team of specialists in various fields, gathered whatever monitoring and recording instruments he could find, and set off for the site in the expectation that two or three weekends of expert observation should suffice.

But it was not until seven years later that the report on the investigation was published: and it was the result of nearly 2000 man-hours of observation by himself and his team of colleagues. During that period they observed 178 UFOs, 157 of which were recorded on their monitoring instruments. They combined visual observation and photographic records with radar and other forms of detection that were set up in separate locations for simultaneous monitoring.

The great majority of the phenomena observed by Rutledge's team were lights in the sky, generally at night, with little or no discernible shape. There has been an increasing tendency among ufologists to disregard this type of sighting unless there is very good circumstantial evidence surrounding it, because there is very little one can deduce from a blob of light. Besides, lights

The sky at night over Piedmont (below) and Cape Girardeau (bottom). It was phenomena such as these that in 1973 started Harley Rutledge on his studies. Until then researchers were beginning to grow disenchanted with lights in the sky as evidence of UFO activity, since such sightings were open to many interpretations. But Project Investigation was to use monitoring techniques that proved that images, like the two shown here, were very definitely not the product of natural phenomena





Above left: the principles of triangulation, which can be used to plot an object's height and distance from the ground. To make the calculation the vertical angles (A and D) and the horizontal angles (B and C) must be measured simultaneously from two points on the ground a known distance apart (baseline)

Above right: a plan view of the course of a UFO seen on 25 May 1973, as it was plotted by Project Investigation. At 9.43 p.m. researchers in the observation posts at Pyle's Mountain and Mudlick Mountain, 11 miles (18 kilometres) apart, had the object in view. Using triangulation, they were able to measure the height and the distance of the UFO and so pinpoint its position. Between 9.43 and 9.46, nine such points were located at 15-second intervals

are the most easily misinterpreted of all visual phenomena: whereas a domed disc with portholes must be either a 'nuts and bolts' craft or an illusion of some kind, a light-blob can be anything from a car headlamp to a meteorite, a satellite or even light reflected off a flock of birds. Rutledge's highly practical approach, concerned only with the *facts* of the sightings, quickly eliminated any such obvious causes of misidentification. Using the surveyors' technique of triangulation, the precise location and course of the objects could be established and plotted, which meant that their size, altitude and speed could also be accurately calculated.

Here is a typical example of the observations made by Rutledge's team, a sighting recorded on 25 May 1973. That evening, two field units had been set up, one on Pyle's Mountain ('P') and the other on a fire tower on Mudlick Mountain ('M') some 11 miles (18 kilometres) distant; these two observation points were equipped with monitoring instruments, and were in radio contact with each other.

At 9.37 p.m. the four observers at P reported a light towards the west. The observers at M immediately confirmed it, and at once initiated the measuring of bearings and altitudes, which were transmitted every 15 seconds, at the same time being recorded on video tape.

At 9.42 P reported the object as 'moving across the sky rather slowly; it is fairly bright, say a first-magnitude star. It is yellowish-orange in colour.' M reported, 'We have it in full view now.'

By 9.43, with both posts obtaining a clear view of the object, its precise location was calculated by triangulation. Between 9.43 and 9.46, nine such points were located at 15-second intervals; one point was missed because of radio interference, but P confirmed that the object was still on its apparent course.

Lost and found

At 9.46 M lost sight of the object; at 9.48 and 9.50 P had two further observations, but in the absence of simultaneous observations from M these could be considered accurate only as regards direction.

The result of this series of matched observations was that the object was plotted precisely over an erratic course of more than 15 miles (25 kilometres) and less precisely over a considerably greater distance. Analysis of this data showed that the object was travelling initially at about 310 miles per hour (500 km/h), accelerating after changing its course to about 325 miles per hour (523 km/h). While this gives little positive information about the nature of the phenomenon, it eliminates many possible explanations. No car could be at such an altitude; no bird could fly that fast; no satellite could

fly so low; no meteorite could change its course in such a way, and so on.

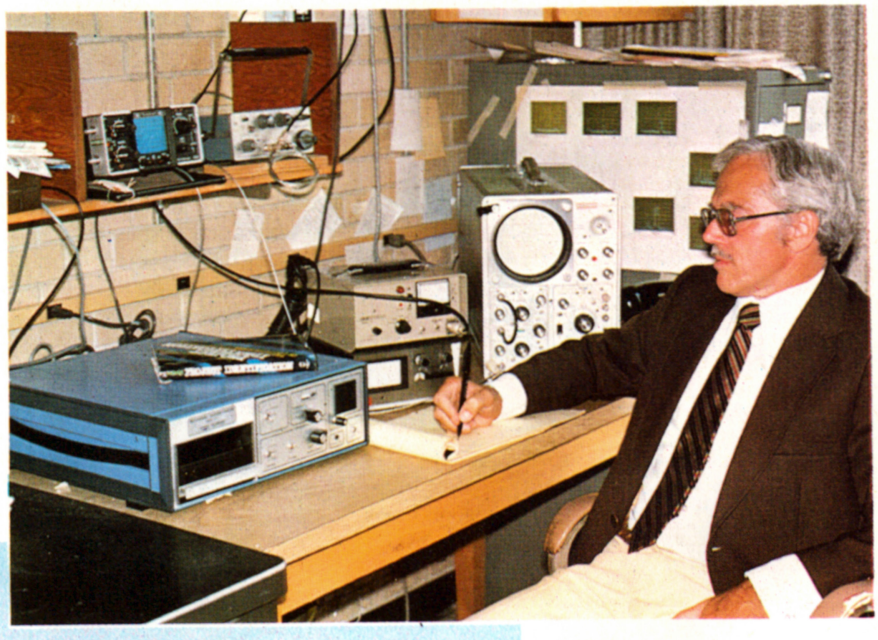
By such means, Project Investigation has established beyond question the reality of the phenomenon and invalidates most, if not all, naturalistic explanations. Its instrumental record provides a solid basis for future research. But Rutledge's observations also established that the objects seemed to respond specifically to the actions of the observers. On at least 80 occasions, he registered an apparent synchronicity between something connected with the observers, and the objects. But it was not a consistent pattern of behaviour – sometimes the objects would respond in one way, sometimes in another. At the same time, however, such synchronicity occurred too often to be easily dismissed as coincidence.

Watching – or being watched?

The events in themselves were trivial. For example, on 21 June 1973 Rutledge pointed his flashlight up at a stationary light; at once it began to move, seemingly careful to avoid the observation post by veering away. On 20 June 1976, he was pointing at what seemed to be a new star and it immediately 'went out'. On several occasions 'stars' halted, or began to move, or changed course when observation began, a camera was aimed, or car headlights came on or off. There were even cases in which the object seemed to be responding to the voices of the observers – at a distance of 2 miles (3 kilometres) or more – to radio messages between observation posts, and even to the thoughts of the observers (although this, of course, cannot be established scientifically, and so could be dismissed as unacceptably subjective). But such behaviour at least justifies the hypothesis that the objects are possessed of a certain degree of intelligence, or are controlled by intelligent beings. It also seems to indicate that they possess very sophisticated means of registering the actions of observers who were, of course, at ground level – mostly in the darkness – and not easily detectable from the air.

Perhaps it would be inadvisable to draw premature conclusions from the results of Rutledge's project, but no one has done more to establish the physical reality of the UFO phenomenon.

Once hard facts have been established, they can be used as a basis for hypotheses that can be tested; and this is the second form that practical ufology can usefully take. But because the facts of ufology are themselves so much in dispute, the opportunities for testing hypotheses are much more limited: yet it is surprising how often ufologists fail even to take the most obvious practical steps. In *The Welsh triangle* (1979), investigator Peter Paget claimed that Stack Rock, in Dyfed, was a secret UFO base (see page 810). Yet, even though he was researching in the area, he



Below: Harley Rutledge with his portable battery-operated oscilloscope and spectrum analyser

Bottom: workers on Project Investigation set up their equipment in a gesture equivalent to putting out the 'welcome' mat. Despite the preparations, UFOs or those who control them still seem to play hard to get. Harley Rutledge and his team noted that on occasions the objects appeared deliberately to move out of the line of vision when the monitoring devices were switched on

never took the step of visiting the island itself to establish the truth. If his claim had been correct, he would, of course, have made one of the most sensational discoveries in the history of the world – and would have been able to live in comfort for the rest of his days on the proceeds. Instead it was a BBC television reporter, Brynmor Williams, who chartered a boat to visit Stack Rock and see if he could find a UFO base there. He found none.

Those who put forward sensational claims should be able to back them with some kind of evidence. Circular areas of flattened crops, and other curious physical traces, have often been claimed as evidence of saucer landings: the PROBE group of Bristol took a cold look at such claims (see page 2418) with fascinating results. The same group, in 1981, decided to test their theories about a 'UFO' sighting at Warminster – that, they felt, sounded suspiciously as though it might have been a balloon. They did not doubt the sincerity of the witness, feeling that she had, indeed, seen an unidentified object flying across her field

Below: Alvin Lawson with Judy Kendall – one of the people who claim to have been taken on board a UFO. She is one of the few abductees who has not become a guru to the movement and claimed other sightings

Bottom: is it an alien spacecraft? Is it a UFO? No, it's a balloon floating in the skies over Warminster. The photograph was taken by the PROBE group during an experiment to prove that a witness's UFO sighting had in fact been a balloon

of vision, as she described. But the speed, direction and flight characteristics were such that a natural explanation seemed possible.

So a balloon was obtained, and 'flown' – on a thread – along a course similar to that of the alleged UFO: the witness was invited to watch, and photographs were taken. The witness agreed that what she could now see was probably what she had originally seen. A futher test in which the balloon was released – and duly lost – confirmed this opinion, and the conclusion was that 'the investigation and resultant tests showed that the UFO as reported resembled, behaved like – and most probably was – a silver/red plastic/aluminium laminate balloon, released some time before the sighting from a location west of Warminster.'

Such debunking operations may not be the most gratifying aspect of ufology, but they play an important part in eliminating false data from the files, enabling the 'true' phenomenon to be seen more clearly.

But the most dramatic experiment in practical ufology was almost certainly that conducted by Professor Alvin Lawson of California (see page 2211). His comparison of 'imaginary abductees' with persons who claim to have been abducted on board UFOs relates only to a limited part of the UFO phenomenon, of course, but he and his colleagues have established that ordinary people, with little knowledge of the UFO phenomenon, are capable – in the hypnotic state – of fabricating an imaginary abduction event that matches, in extraordinary detail, the stories told by people who claim actually to have been abducted. Certainly at first sight this tends to support the supposition that the 'real' abductees are simply fantasising; but this is by no means an obvious conclusion.

Supporting the view that the 'real' accounts are what they claim to be is, Lawson noted, the fact that there were marked differences in the ways the two classes of subject told their stories. The descriptions of their alleged abductions were very similar, but the 'real' witnesses seemed to have a greater emotional stake in their story. Of course this, too, may be accounted for in psychological terms; clearly, the way lies open for much further research, such as Lawson's later exploration of the possibility that abduction stories reflect memories of birth traumas.

The evidence Lawson has gathered for this hypothesis is very persuasive but, as he himself is the first to insist, it remains nothing but a hypothesis, inviting other ufologists to seek to establish or refute its validity. Lawson's great achievement has been to demonstrate that some, at least, of the mass of ufological data can be put to the test. And it is this approach that will almost certainly solve the UFO riddle – one day.

The crippled phantom of Ardachie Lodge could be seen only by the new housekeeper – but it could be heard by many people. Eventually its activities made the house intolerable for its living occupants. COLIN GODMAN describes the end of the Ardachie affair

A desirable residence?

WHEN THE NEW HOUSEKEEPER and her husband arrived at Ardachie Lodge, Inverness, Scotland, on 17 August 1953 the peaceful life of the household was shattered. For two nights in succession the family were kept awake by the activities of a noisy phantom that only the housekeeper, Mrs McDonald, could see. She claimed that the ghost was an old lady in a shawl, who crawled along the floor on her hands and knees.

The house's owner was Dr Peter McEwan, a qualified psychologist and a member of the London Society for Psychical Research (SPR). His feelings about the case were mixed. On the one hand he was experiencing for the first time a full-scale haunting with plenty of opportunity for scientific study. On the other hand he wanted to protect his wife and young children from alarming phenomena and sleepless nights. He contacted the SPR to find out if there were any members in the locality who might help him clear up the case.

On the third and fourth nights that Mr and Mrs McDonald spent at the Lodge, they were awakened again by the familiar sounds of knocking and rapping, and, unlike the previous occasions, the noises continued

after the lights were put on. Peter McEwan had told them to wake him if they heard anything, but they ignored these instructions; they were becoming increasingly apprehensive that these nocturnal disturbances would jeopardise their employment at the Lodge.

On the fifth night the party at the Lodge was joined by a Mr Ross and a Mr Matheson, both members of the SPR. At 10.30 p.m. the household assembled in the McDonalds' kitchen (where the couple were now sleeping) and settled down for a vigil. With the main light turned off, the room was lit only by the glow from the open kitchen range. Ross and McDonald sat on one bed, Matheson on the other; Mrs McDonald sat between them in an armchair. The McEwans stood near the door. Soon the watchers heard rappings from the window wall, rather like the sound of knuckles tapping on wood. The knockings came in slow tempo, three raps at a time with a short interval between individual raps. Sighs coming from Mrs McDonald

seemed to be synchronised with the noises.

Mr Ross was watching Mrs McDonald carefully. He reported in the SPR's *Journal* (December 1955):

> She appeared to become transfixed. A lit cigarette dropped from her right hand on to the carpet. Her two arms hung rigid by her side. Her attention was focussed, glassily, on the open door.

Suddenly Mrs McDonald screamed, and shrank back. Hastily, the lights were put on. The housekeeper recovered herself a little, and told the others she had clearly seen the figure of a woman enter the room.

Most of the party then withdrew, to give Mrs McDonald a little time to recover. When they returned, she was in bed. As soon as the lights were turned off, her breathing became laboured and the rapping began again. After a time Mrs McDonald sat up, and asked her husband if she had been dreaming. She said something about a 'rose tree' and 'neglect'. Then she said, 'It's coming to me now – someone has moved a rose tree.' She lay back, and the rappings began again.

Was Mrs McDonald producing the noises herself? During one set of knockings, Matheson flashed his torch on the wall from which they emanated. This appeared to distress Mrs McDonald, but none of the watchers saw her hands move. The session was brought to a close, and everyone went to bed. The next day the McDonalds claimed that the rappings had continued until five in the morning. Matheson and McEwan spent the night in the guest room (where the ghost had made its first appearance) and slept soundly without any disturbance.

Left: Dorothy and Peter McEwan (top) revisit the site of Ardachie Lodge. They had spent less than a year in the house when the spate of hauntings disrupted their happiness in August 1953. They sold the house (below) as soon thereafter as they could, and a later owner demolished it in 1968

The roses (top) at Ardachie Lodge were the pride of Mrs Bruen, the former owner. But her favourite rose tree died after Davy Coutts (above) moved it at the McEwans' request. Mrs Bruen's spirit apparently complained of this when Mrs McDonald, the housekeeper, spoke in a trance-like state of a neglected rose tree

The next day the SPR investigators departed, leaving Peter McEwan to think about the riddle of the rose tree. When he and his wife had first arrived at the Lodge, he had instructed the part-time gardener to clear out an old greenhouse in the garden so that they could grow tomatoes in it. The only occupants of the greenhouse had been a peach tree and a large old rose tree. The rose had been transplanted outdoors, and had subsequently died. Could this be the rose tree Mrs McDonald was referring to?

A passion for gardens

The McEwans' neighbour, Mrs Beckett, had already told them about Mrs Bruen, the old lady who had previously owned Ardachie Lodge. She now confirmed that Mrs Bruen had had a passion for her gardens, particularly the little rose garden where Mrs McDonald had felt so uneasy on her first day at the Lodge. Her pride and joy was a rare early-flowering rose tree in the old greenhouse. Peter McEwan could not bring himself to tell his neighbour the rose was dead.

The McEwans were quite certain they had not talked about Mrs Bruen to the McDonalds. How could Mrs McDonald have known what Mrs Bruen looked like, and how could she have known about the rose tree? The two people most likely to have told the McDonalds about the previous owner were the nanny, Jenny Maclean, and the gardener Davy Coutts. When this author investigated the haunting in the 1970s, he took pains to trace them.

Jenny Maclean had gone to school in Fort Augustus, and had first seen Mrs Bruen in church and then got to know her at Ardachie. Could she have met the McDonalds and described Mrs Bruen as she had seen her, cycling through the district in her shawl and little hat? But it seemed that Jenny Maclean was in Inverness when the McDonalds arrived at the Lodge, and she did not rejoin the

Ardachie household until after they had left.

When the author questioned Davy Coutts at his home in Fort Augustus he could recall vividly events at Ardachie Lodge during the 1950s. He remembered losing the prize marrow and a hundredweight (50 kilograms) of best seed potatoes to the pedigree pigs, and could also recall the rose tree incident. He was adamant that he had not spoken to the McDonalds; and his diary confirmed that he was at home in Fort Augustus looking after the children (while his wife was away) when the McDonalds were at the Lodge.

So it seemed impossible for Mrs McDonald to have heard about Mrs Bruen and the rose tree from the local people. What of the rapping noises and the footsteps? Could Mrs McDonald be producing these by fraud? On the night of 22 August the McEwans sat with the McDonalds yet again,

Above: Ross and Matheson, called in by Peter McEwan, a fellow SPR member, take Mrs McDonald's pulse in the BBC-TV reconstruction of the Ardachie case. She had just been terrified by 'seeing' the ghost of a woman, invisible to everyone else

Left: the Abbey School, Fort Augustus, in the rolling pine-clad countryside that was the setting for the nightmare at Ardachie Lodge. The fertile imaginations of the school's pupils provided many of the stories that circulated about events at the Lodge. And Abbot Oswald was said to have carried out an exorcism service at the house

but although sounds were heard it was impossible to determine their origin and the session was inconclusive.

By this time the sense of strain at Ardachie was becoming unbearable. Peter McEwan arranged for his wife and children to go away for a few days; the McDonalds were asked to leave. On 29 August McEwan drove them to the station to catch the Glasgow train en route for London. It was only 12 days since they had arrived, with only three pounds and high hopes of a new life. They left in tears.

With their departure peace returned to Ardachie, but as far as Dorothy McEwan was concerned her home had been ruined. Peter McEwan put the estate on the market, and sold it to a vet, who carried on the farming business successfully. He in his turn sold it to a Major Vernon, a landowner who also bought the adjacent Glen Doe estate. A few years later, in 1968, the empty Lodge was demolished to put an end to the gossip.

Some of the stories that were circulating concerned an exorcism that had reputedly been carried out by the head of a local abbey. During the McDonalds' last days in residence mass had been said at Ardachie by Abbot Oswald, and candles had been lit, it was said, at all the places where Mrs McDonald had seen the crawling woman.

Other stories were told of Mrs Bruen's last days. Tormented with illness and increasingly confused she suffered from the delusion that she had been robbed. She was to be seen, local legend had it, searching along the corridors of the house on her hands and knees, knocking on the floorboards for her missing valuables.

Stories like these convinced Peter McEwan that he had been dealing with authentic paranormal phenomena at Ardachie. The strange thing about the haunting was not that a previous owner of the house should return to her old home, but that she should appear to only one person, the unfortunate Mrs McDonald.

continued from back cover

crossed swords in print, as the letters pages of the SPR Journal have often shown, but now for the first time Mr Grosse challenges Mrs Gregory to a public debate on the matter:

It is beyond my comprehension why Anita Gregory insists on extracting isolated incidents from the Enfield poltergeist case – which are subject to disagreement – and does not consider the evidence as a whole.

She carefully ignores the documented statements and evidence of the witnesses involved and completely ignores or discounts the personal experiences of the investigators. I thank her for speaking of me in the kindest manner, but the picture she draws of me as a doting father figure concerned only with the welfare of the Harper family was not exactly true to life.

I am by profession a successful inventor and industrial designer – and to be successful it has always been necessary for me to approach my subject in a clear and precise manner. Psychologists and academics have no monopoly of the analytical approach, and unlike my critics I am prepared to substantiate my statements with evidence I have in my possession, without resorting to hearsay.

I challenge Mrs Gregory to a public debate, where I shall produce my evidence and she will have the opportunity to do likewise. The tapes of the psychokinetic (PK) activity and those of the deep voices can be played, and documentary evidence produced. The public can be the judges of their authenticity.

If the contradictory statements included in Mrs Gregory's concluding paragraphs are an example of clear analytical thinking, I think the investigators of the Enfield case have little to fear from the type of criticism being presented.

Two of the most significant letters from our Enfield postbag were from Mr John Burcombe, Mrs Harper's brother, and from Mrs Peggy Nottingham, her neighbour. Both short notes bristle with indignation about Mrs Gregory's article; Mr Burcombe says:

Having read Anita Gregory's article in *The Unexplained* I must protest that I ever said the deep voice was false. Everybody is, of course, entitled to his or her opinion – but it is a different matter altogether to imply that someone has lied.

During the course of the investigation I met many experts who made flying visits to Mrs Harper's house. Most of them said that Janet was throwing her voice. But have you ever heard of anyone who can throw their voice with their lips sealed with 6-inch [15-centimetre] wide surgical tape?

I cannot stress too strongly that Mr Playfair's book is a true account of the happenings at Mrs Harper's house.

And Mrs Nottingham adds:

I deny that I ever said – or implied – that the voice was false. And as I live next door to Mrs Harper I am in a better position than most to judge that Mr Playfair's book is true.

Moreover, Anita Gregory's article implies that I lied. I object to this most strongly.

Many experts visited Mrs Harper's house for short periods – even the local police – does she doubt their word too? But only two people remained for the whole period [of the disturbances] – Mr Guy Lyon Playfair and Mr Maurice Grosse.

However, Mrs Gregory has a supporter in Mrs M. Callaway of Uttoxeter in Staffordshire:

I quite agree with Anita Gregory's findings on the Enfield poltergeist. I most definitely get the impression that Janet was enjoying herself immensely.

In my experience of poltergeist activity and hauntings one is always struck by the troubled faces of those involved, often coupled with a fear bordering on nervous collapse. Janet, however, appeared to be highly delighted and amused, judging by the photographs.

And on page 2458, where Janet is shown being 'thrown' out of bed, as a student of Hatha yoga I can categorically state that what is really happening is that she is going into a *controlled* half shoulder stand, balancing her elbows on the bed. Her hands are on her spine for support, her legs in a controlled position over her face. (It is also interesting to note her modesty during this frightening 'poltergeist attack' – she is holding her nightie over her bottom.) Instead of remaining on her shoulders it seems, judging by the blur of her feet, that she intends to carry the action into a full forward roll to land feet first on the floor with a thud. *Voilà!* Little madam.

And notice how she has selected her position carefully, even clearing the bedclothes away from the mattress to make a flat surface for her rollover – and that she is not being flung up the wall or in the direction of the head board. What a thoughtful poltergeist!

She ought to have had that bottom spanked.

A spirit of mischief

Of all the articles published in *The Unexplained* few have provoked such extreme reactions as the three concerning the Enfield poltergeist. The first two, by investigator Guy Lyon Playfair, stimulated considerable interest – but it was the third, by critic Anita Gregory, that came in for the most bitter attack. Mr Playfair was among the first to join the fray

Anita Gregory, in her article entitled 'Enfield on trial' (see page 2458), states that 'as regards the Enfield case, [there is] a certain amount of testimony – some of it quite impressive and reassuring – but there is no real *evidence*.' She does not seem to appreciate that in psychical research, as in the law, testimony *is* evidence.

My dictionary defines evidence, in the legal sense, as 'the documentary or verbal statements and the material objects admissible as testimony'. (Testimony is defined simply as 'a declaration or affirmation of fact'.)

In 1982 I took part in three court cases, two as juror and one as prosecution witness. In two of the cases there was no material evidence at all, only testimony. Yet verdicts were reached. My performance as a witness seems to have impressed and reassured the court, since the prosecution won. I see no reason why the facts of the Enfield case should not be judged by the same standards by which we send people to prison.

So what is the evidence from Enfield? First, there are the documented statements from a score of witnesses, several of which are included in the thick file compiled by the special committee of the Society for Psychical Research (SPR) that re-examined most of the chief witnesses, including Maurice Grosse and myself. There is no suggestion in their report that any of the witnesses was not telling the truth.

Much of the verbal evidence is contained on more than 100 cassette tapes that had been recorded on the spot from September 1977 to October 1978 by Mr Grosse and myself, plus 12 cassette tapes containing about 16 hours of individual statements, most of them recorded immediately after the incidents they describe.

The material evidence consists of several burned objects, stones, marbles, pieces of toy brick, numerous photographs taken immediately after the occurrence of unexplained events (and, in at least two cases, during them), David Robertson's chart recording made during the metal-bending experiment, and a nice collection of bent cutlery. In connection with Janet's deep-voice phenomenon, there are numerous tapes, two filmed sequences, the laryngograph chart recording and – not least – the spoken testimony of the speech therapist who actually heard it.

Let us look briefly at Mrs Gregory's criteria for evidence, on which she bases her personal opinions. First, it is surprising that, as a council member of the SPR, she makes no mention of the findings of her colleagues in the report mentioned above. Second, she quotes, out of context and with no supporting evidence at all, two of the leading witnesses of the Enfield phenomena – Mr John Burcombe and Mrs Peggy Nottingham, Mrs Harper's brother and neighbour respectively – although she is aware that both of them read the manuscript of my book *This house is haunted* before its publication in 1980 and signed a statement declaring that it was true. Lastly, she unquestioningly accepts the informal opinions of a 'senior hospital consultant' who never visited the house, never heard even a recording of the deep voices, and is not stated to have had any experience at all of poltergeist cases. Yet she fails to mention the testimony of the other hospital consultant who did visit the house, did hear the voice – and gave an opinion on it at some length at the time.

However, I do sometimes agree with Mrs Gregory. Her description of the Enfield case, as reported in my book, as a 'chaotic and sometimes distressing state of affairs' is a good one. And she also had a point when she wrote in the SPR *Journal* of October 1981: 'A positive claim for psychical phenomena will almost certainly ensure rejection; any assertion to have debunked one will be given a favourable treatment.'

Guy Playfair's fellow investigator at Enfield, Maurice Grosse – who had been the first on the scene – takes up the criticism of Mrs Gregory's article. This is not the first time they have

continued overleaf